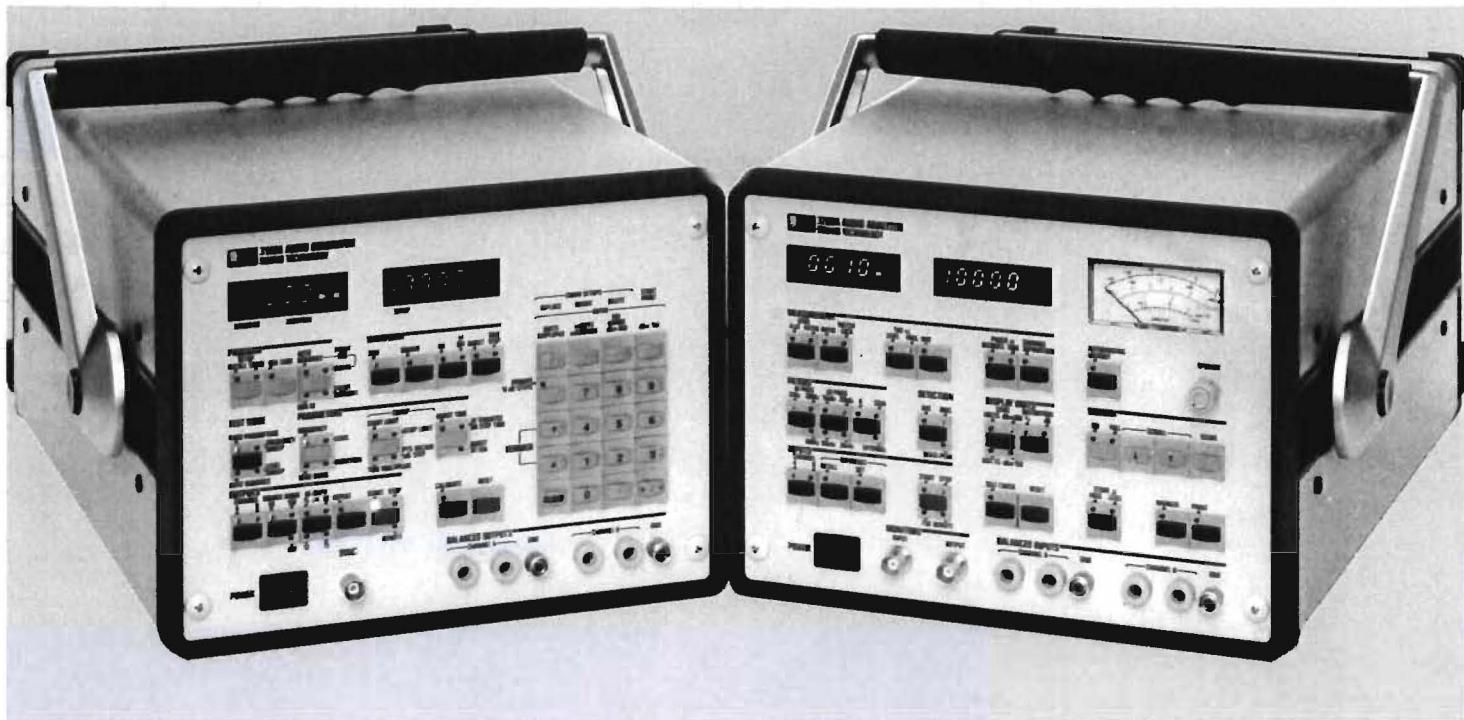


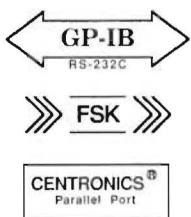
3000 SERIES PROGRAMMABLE TRANSMISSION/ AUDIO TEST SYSTEM SOUND TECHNOLOGY

Programmable • Portable • High-performance



These instruments have the following exclusive features:

communications protocols:



AUTOMATIC. Exclusive FSK communication allows automatic remote testing (without modems or computers).

COMPREHENSIVE. Complete audio testing including *graphic and tabular printouts* without using a computer.

INTERNAL-PROGRAMMABLE. Store and chain up to 80 different front panel set-ups into 16 different proof locations.

INDUSTRY-LEADING SPECIFICATIONS. Will test the best 16-bit digital systems!

COMPREHENSIVE WAVEFORMS. 3100A Generator outputs precise Sinewaves, Squarewaves, SMPTE-IMD,* Tone-burst* and Sine/Step* waveforms.

* Optional



SOUND TECHNOLOGY

Represented by
Atlantic Marketing
Charlotte, NC
(704) 542-3380

SPECIFICATIONS

3100A PROGRAMMABLE AUDIO GENERATOR

Sinewave, Toneburst, Sine/Step

Minimum Frequency: 1 Hz (10 Hz during automatic sweep or panel recall)
Maximum Frequency: 102.39 kHz ± 4% Vernier
Frequency Accuracy: .03% fixed parameters
.1% automatic sweep
Frequency Resolution: .01% 10 Hz to 102.39 kHz
Frequency Sweep: User selectable 4 to 255 pts/decade, internally calculated to provide linear increments on a log-frequency scale; start and stop frequencies selectable from 10 Hz to 102.39 kHz. Sweeps up or down.
Level Sweep: User selected end points in dBm (600 or 150). dB/STEP keyed-in .05 dB to 20.00 dB. Sweeps up or down.

Squarewave

Minimum Frequency: 1 Hz
Maximum Frequency: 50 kHz
Risetime: less than 1 μsec, controlled by 3-pole, linear phase filter.

SMPTE IMD (option 004)

IMD Residual Distortion: < .001%

Toneburst (option 005)

Toneburst Time On/Off adjust: 5 msec to 9,999.9 sec.
Toneburst Off adjust: burst off set from 5 to 60 dB in 5 dB increments

Sine/Step (option 005)

Sine/step Sine On/Step On adjust: 5 msec to 9,999.9 sec.

General

Maximum Output: 30.65 dBm/600 Ω load
Balanced or 30.00 dBm/both channels loaded
Unbalanced) 30.00 dBm/150 Ω load
24.00 dBm/150 Ω, both channels loaded
Maximum open circuit voltage: 28.6
Minimum Level: -90 dBm (24.5 μV)
THD at Maximum Output: < .0008% to 10 Hz to 20 kHz
< .0015% to 50 kHz
.008% to 100 kHz
10Hz to 20 kHz Flatness: 0.1 dB; .15 dB to 100 kHz
Level Accuracy at Mid-band: 0.2 dB
Level Resolution: .05 dB
600 Ω Source Resistance Tolerance: ± 0.5% (-0.35%
both channels loaded)*
150 Ω Source Resistance Tolerance: ± 2% (-5.6% both
channels loaded)*
50 Ω Source Resistance Tolerance: ± 3%
Selectable Load Resistance: Key-in 50 Ω to 99,999 kΩ
Number of Channels: 2
Balance: > 120 dB (Floating, DC coupled)
Separation: > 100 dB to 20 kHz, > 80 dB to 100 kHz
Sync Output: 5 V positive-going squarewave - follows
(Ground Lo Freq on IMD and Burst Envelope on
Referenced) Burst or Sine/Step
De-emphasis: 10 μsec, 25 μsec, 50 μsec or 75 μsec.
(option 006) Applies to all functions
De-emphasis Accuracy: .02 dB
Power: 100, 120, 220, 240 V, 48-66 Hz, 70 W.
Dimensions: HWD: 8.0 × 10.1 × 17.4" (20 × 26 × 44 cm).
(Handle adds additional 2.0" (5 cm) to width).
Weight: Net/Ship: 30.25 lbs (13.75 kg) / 38 lbs (17.25 kg).
Environmental: 90% RH, +50 to +104° F (+ 10 to + 40° C).

* Output Level is automatically corrected for 2-channel loading.

3200A PROGRAMMABLE TRANSMISSION/AUDIO ANALYZER

Level, Flat or Filtered

Units: Volts, dBm 600, dBm 150, Watts (8Ω)
Bandwidth: > 300 kHz
Ranges: 30 μV to 100 V, Autoranging
Filtered: one each of Hi Pass and/or Lo Pass
Common Mode Rejection: > 100 dB at 60 Hz
Residual Noise: < 4 μV with 80 kHz B.W.
10 μV with 300 kHz B.W.

Ratio

Measures against user set reference level
Units: dB
Filters: Hi Pass, Lo Pass and Weighting selectable

THD

Units: % or dB
Range: .001% to 100% full scale
Residual Distortion: < .001% 10 to 20 kHz*
< .002% to 50 kHz
.008% to 100 kHz
Residual Noise: < 4 μV with 80 kHz B.W.
*using 80 kHz filter
Measurement bandwidth: > 300 kHz
Fundamental Rejection: > 10 dB below residual noise +
Distortion
Accuracy: ± 1 dB to 20 kHz, ± 2 dB to 100 kHz
Minimum Level: 30 mV

Notch Lock (option 010)

Same as ratio except Notch Filter used. Notch auto-nulls with signals above 0.1 V, then locks-up when signal drops below 0.1 V. Time for ensuing measurement of noise in the presence of a low level signal (e.g., quantization noise): approx. 30 sec.

IMD (SMPTE - option 004)

Residual Noise + Distortion: < .002%
Accuracy: ± 1 dB
Frequencies: 60 Hz, 7 kHz

Phase

Range: ± 180.0°
Frequency: 10 Hz to 40 kHz
Level: 50 mV to 100 V
Accuracy: ± 0.8°
Resolution: 0.1°

Channel Separation

Measures cross-talk into selected channel
Residual cross-talk: 100 dB to 20 kHz
80 dB to 100 kHz

General

Input Channels: 2
Frequency Measuring Error: .01%
Frequency Measuring Resolution: 5 digits
Flatness: 20 Hz to 50 kHz: < 0.1 dB
50 kHz to 100 kHz: < 0.2 dB
10 Hz to 20 Hz: < 0.3 dB
Crest Factor: 6
Detectors: AVG, RMS, Q-PEAK
LP Filters: 80 kHz, 30 kHz, 22 kHz, 15 kHz
HP Filters: 22 Hz, 200 Hz, 400 Hz
THD Measuring Speed (Sweep, autoranging off)
at 10 Hz - 5.0 seconds/reading
at 100 Hz - 1.25 seconds/reading
at 1 kHz and above - 1.0 seconds/reading
Amplitude Measuring Speed (Sweep, autoranging off)
at 10 Hz - 2.5 seconds/reading
at 100 Hz - 650 msec/reading
at 1 kHz and above - 500 msec/reading
(Double above times for "autoranging ON")
Power: 100, 120, 220, 240 V, 48-66 Hz, 70 W.
Dimensions: HWD: 8.0 × 10.1 × 17.4" (20 × 26 × 44 cm).
(Handle adds additional 2.0" (5 cm) to width).
Weight: Net/Ship: 26.5 lbs (12 kg) / 36 lbs (16.5 kg).
Environmental: 90% RH, +50 to +104° F (+ 10 to + 40° C).



SOUND TECHNOLOGY
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CAMPBELL, CALIFORNIA 95008
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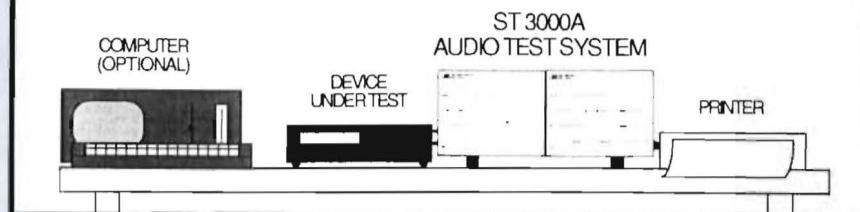
SYSTEM FLEXIBILITY

Sound Technology designed the 3000 series instruments with *flexibility* in mind. The ability to configure the system as a separate Generator and Analyzer allows for easy (and cost effective) remote testing. Impromptu automated remote testing is easy because

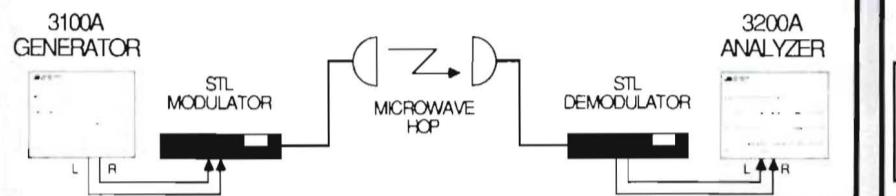
of ST's use of FSK automation. No computers, modems or phone lines are necessary. Bi-directional STL testing is also possible without the need for computers. The 3000 series also excels in bench-top testing applications.

COMPREHENSIVE SEL

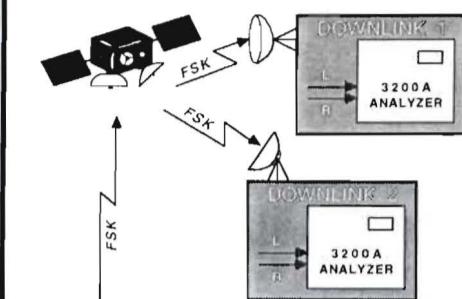
AUTOMATED BENCHTOP TESTING



AUTOMATED REMOTE TESTING (STL EXAMPLE SHOWN)

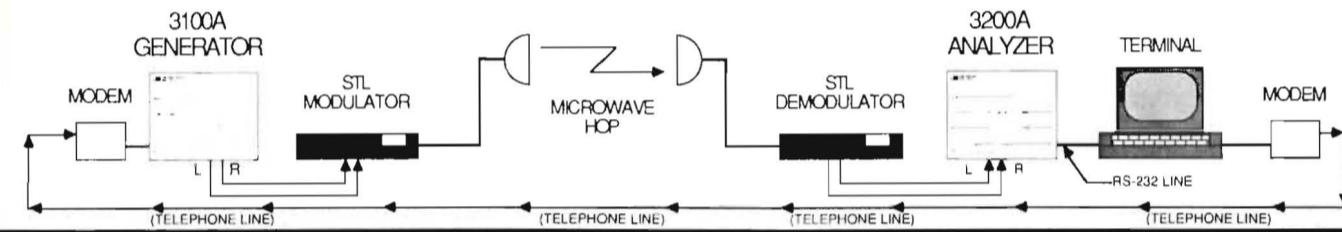


MULTIPLE SITE TESTING



Multiple site testing involving multiple Generator sites or multiple Receiver sites is EASY using the ST 3000 Series instruments as no computers, modems or phone lines are used.

AUTOMATED REMOTE TESTING: UNMANNED GENERATOR (STL EXAMPLE SHOWN)



OPTIONS

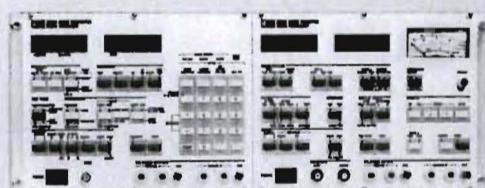
3100A GENERATOR

- Option 002 Rackmount Mainframe.
- Option 004 SMPTE-IMD waveform. Intermodulation Distortion (waveform per SMPTE method of 7kHz on 60Hz at 1:4 ratio).
- Option 005 Special Functions Group. User-definable Toneburst and Sine/Step waveforms. Allows for dynamic testing of audio systems using Toneburst and of narrow-band transmission systems using Sine/Step waveforms.
- Option 006 De-emphasis Group. User selectable 75, 50, 25 and 10 micro-second de-emphasis curves for Broadcast proofs. Allows for de-emphasized fixed frequencies or frequency sweeps.
- Option 008 Rugged Flight Case.
- Option 009 GPIB Computer Interface. Industry standard IEEE-488 computer interface bus. (RS-232C interface and Centronics printer port standard).

3200A ANALYZER

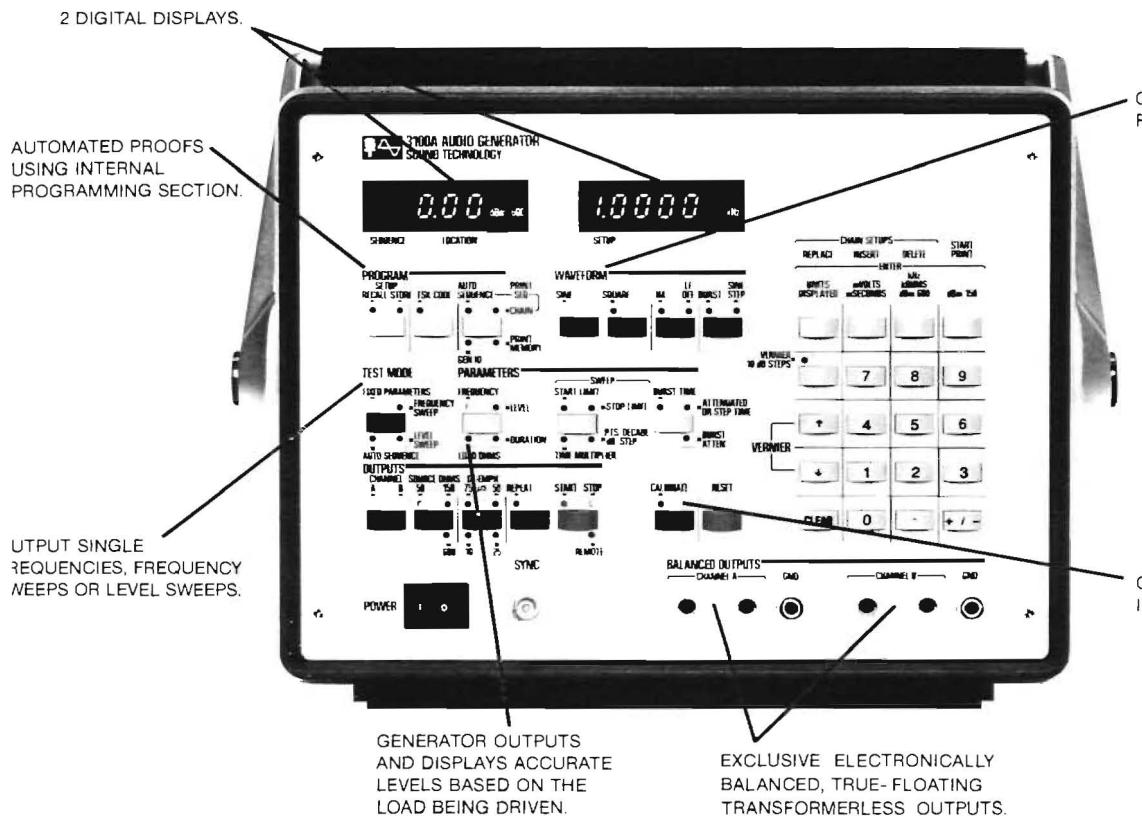
- Option 002 Rackmount Mainframe.
- Option 004 IMD Analysis capability. As per SMPTE method.
- Option 008 Rugged Flight Case.
- Option 010 Notch Lock. Option for digital audio measurement. Allows for quantizing noise and distortion measurements. Locks-up normally auto-ranging notch filter for measurements in the presence of low level signals.
- Option 011 Graphics Printout. Print out test results in graphic format directly from the Analyzer to an Epson™/ compatible printer.

MECHANICAL



The 3000A Audio Test System
(Generator and Analyzer in One Mainframe)

3100A PROGRAMMABLE AUDIO GENERATOR



The Sound Technology 3000 Series...
The NEW generation in audio testing!

The ST3000 Series design philosophy combines the "best of all worlds" for audio testing in one package. You can use the instruments *manually*, use *internal automation* or *externally automated* using one of the 3000 series' industry standard interface busses!

AUTOMATED BENCH-TOP OR REMOTE TESTING

Simple bench-top operation or remote automation results from Sound Tech's unique use of FSK (frequency-shift-keying) generator-to-analyzer communication. The use of FSK, which is transmitted through the audio line(s) or circuits being tested, allows for automation without external computers! Up to 16 proofs or test sequences can be built into the Generator's programming section. Running a proof is as easy as recalling a two-digit number and pushing "start".

MANUAL MODE

Up until now, when purchasing an audio test system you had to make a choice. A choice between manual or automated testing. The conflict exists because Engineers naturally prefer a manual "mode" of operation when troubleshooting, and they prefer automation when they want to get an overall performance picture.

The solution is the 3000 Series. It excels both in manual use and under automated control. Easy to understand and use front panels make manual troubleshooting easy. Exclusive two LED displays on both the Generator and Analyzer give you twice the information of competitive systems.

INDUSTRY-LEADING SPECIFICATIONS

The 3000 Series was designed for testing 16-bit digital audio systems. Here are some of our specifications:

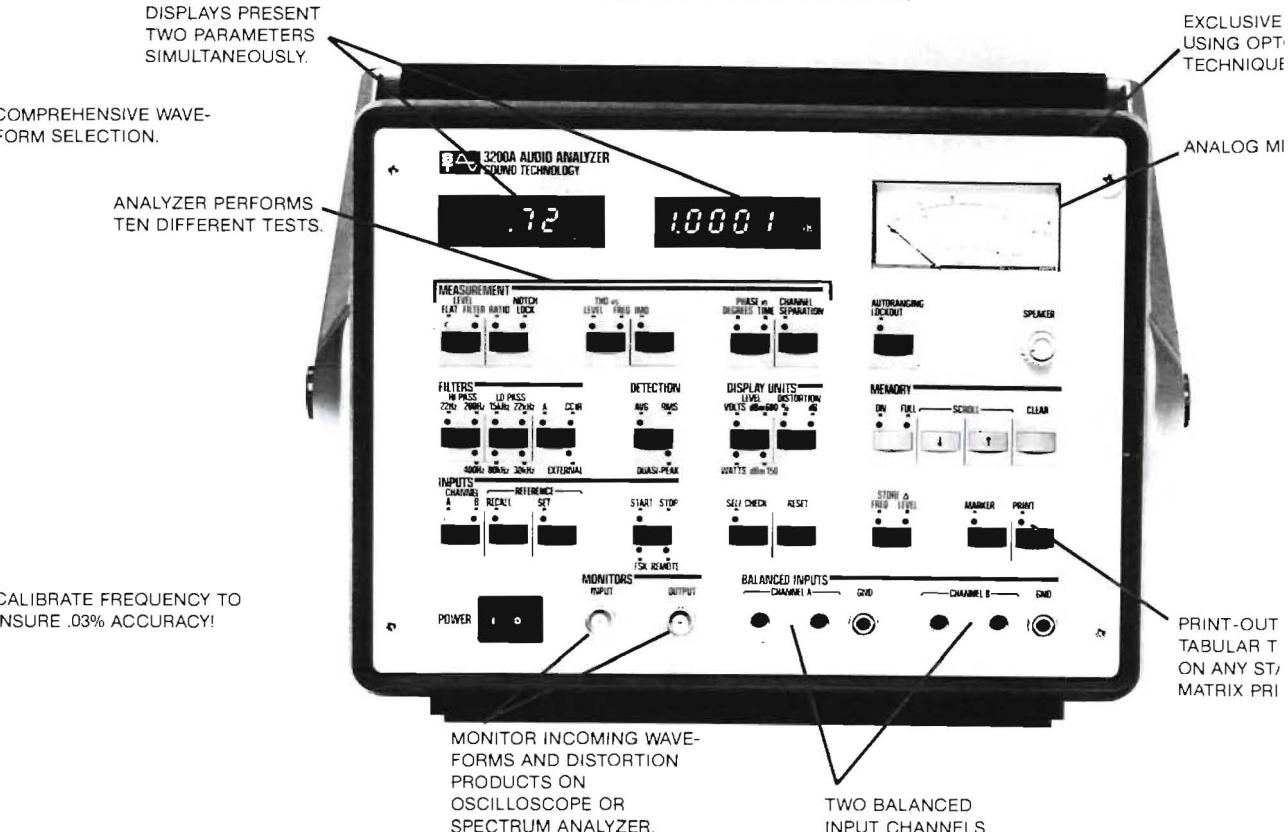
MEASUREMENT SPEED

We designed the 3000 Series with an eye on optimizing the relationship between repeatable test results and measurement speed. We are proud to have achieved our goal: repeatable measurements and the following measurement acquisition times:

Midband ThD measurement 1 second
Level measurement 500 msec
Phase measurement 300 msec

These timeframes allow for running abbreviated proofs in less than 60 second time periods. More extensive proofs only take a few minutes time.

3200A PROGRAMMABLE TRANSMISSION/AUDIO ANALYZER



Gen. ThD (80 kHz LP) <.001%
Level flatness <.1 dB
Phase error tolerance < 1 degree
Residual noise (80 kHz LP) < 4 μ V
Sinewave freq. accuracy < .03%
Squarewave risetime < 0.5 μ Sec
Crosstalk 20 kHz residual < -100 dB

SMPTE-IMD* 7 kHz on 60 Hz, 4:1
Toneburst* 100 Hz to 102.39 kHz
Sine/Step* 100 Hz to 102.39 kHz
* Denotes an option.

All of the above waveforms are generated by the world's best generator: a transformerless, electronically balanced—true floating two-channel output generator. This digitally controlled, analog oscillator runs "RF cool" as the enclosed oscillator is isolated from the multi-layered pc board digital control section using opto-isolators. There is no electrical connection between the digital control circuits and the analog oscillator—therefore, no RF or digital "hash" path to the oscillator. Engineers are amazed

to sweep either the Generator or Analyzer out into the MHz regions and find no digital hash or clock frequencies in the spectrum.

COMPREHENSIVE WAVEFORMS AND ANALYSIS

More than just a sinewave generator, the 3100A is a low distortion function generator having the following waveform capabilities:

Sinewave: 1 Hz to 102.39 kHz
Squarewave: 1 Hz to 50 kHz

Because the balanced outputs are truly floating and transformerless, you can single-end either side to ground without loss of level. Also, you can output a clean (-90 dBm) signal in order to test well below mic-line levels: the oscillator attenuates the noise as well as the signal (over 100 dB of attenuation after the power amp!).

The 3200A Analyzer is no less comprehensive. The analyzer measures the following:

Frequency to 500 kHz
Flat Level to 350 kHz
Filtered Level to 350 kHz
Ratio
Notch Lock*
ThD vs. Level (300 kHz BW)
ThD vs. Freq. (300 kHz BW)
SMPTE IMD*
Φ Error in Degrees to 40 kHz
Φ Error in Time to 40 kHz
Channel Separation to 100 kHz

All r
Merely
Two L
two pa
examp
incom
and Le
readin
until th
range

REMC

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